

**DATE:** December 12, 2006

**TO:** Environmental Health Managers  
District Health Directors  
Office of Environmental Health Services Staff  
VPI/SU Soil Consultants

**GMP #135**

**FROM:** Robert B. Stroube, M.D., M.P.H.  
State Health Commissioner

**SUBJECT:** General Approval for the Use of Proprietary, Non-Gravel Systems at  
Manufacturer's Specifications for Trench Drainfields

### **Background**

The Virginia Department of Health (VDH) has reviewed information concerning installation and use of certain types of gravelless systems according to specifications recommended by the system manufacturer. This includes experience from other jurisdictions and available technical literature. VDH has concluded that, when properly sited, designed, installed, used, and maintained, gravelless systems sized according to individual manufacturer's specifications other than those contained in the *Sewage Handling and Disposal Regulations* (12 VAC 5-610-10 et seq., the "*Regulations*") are capable of treating and dispersing septic tank effluent in a manner sufficient to protect public health and water quality.

VDH recognizes that installation of gravelless systems at manufacturer's recommended specifications may benefit consumers, provided the absorption area is adequate to assure the long-term treatment and dispersal of septic tank effluent or other treated effluents. Sizing a drainfield smaller than specified in the *Regulations* may not result in adverse effects to public health or groundwater because this does not change the fundamental processes by which septic effluent trenches function.

### **Scope/Applicability**

This policy authorizes the initial design of, or contractor substitution of a gravelless septic tank effluent drainfield system with a 25% reduction in trench bottom area, subject to compliance with all of the conditions listed herein. The requirements of this policy do not apply to gravelless systems sized in accordance with the *Regulations* as provided in GMP #116 or GMP # 127.

Persons qualified and authorized to design onsite sewage systems in Virginia may design a gravelless septic tank effluent drainfield using the manufacturer's specifications within an area that meets the requirements of the *Regulations*. All sites where a manufacturer's recommended sizing is to be employed must meet all other requirements of the *Regulations* for a drainfield with gravel trenches (includes conventional gravity, enhanced flow, or low pressure).

For systems installed pursuant to this GMP, only a contractor licensed in Virginia and trained and certified by the manufacturer is authorized to install the gravelless system.

### **Waiver**

Any manufacturer meeting the requirements of this policy for a specific gravelless system shall be deemed to have completed the evaluation process for a provisionally approved system. (See Sections 442- 444 and 446- 447 of the *Regulations*) A Substituted System authorized pursuant to this policy shall be considered a system with general approval pursuant to Section 448 of the *Regulations*.

### **Conditions**

#### 1. General Requirements.

##### A. Limitations.

- (1) All gravelless systems must be of a type authorized by GMP #127 or successor policy, and as listed in the attachment to this policy.
- (2) Gravelless systems are limited to systems serving detached single-family dwellings or duplex dwellings, not exceeding six (6) bedrooms total.
- (3) A reduction in sizing of 25% is allowed for soil texture groups I, II, and III. A reduction in sizing of 15% is allowed for soil texture group IV. The percent reduction is to be based on the trench bottom area.

- (4) Gravelless systems may not be installed pursuant to a Soil Drainage Management Contract (*Regulations*, Article 5, Sections 600-650).

B. Design.

- (1) Modification of valid construction permits. A gravelless system may be installed at a site for which a construction permit has been issued by the Commissioner in accordance with the *Regulations*. The following shall apply:
- a. Except for resizing the drainfield in accordance with manufacturer's specifications and substituting the appropriate proprietary materials or devices, the drainfield shall be installed exactly as permitted. No changes in drainfield trench location, depth, or contour orientation are authorized. The lateral separation of the trenches shall not be less than the center-to-center distances specified in Section 950.F of the *Regulations* (based upon trench width of the gravelless system).
  - b. After installation, the owner shall preserve and maintain the total area ("footprint") required for the conventional drainfield, including reserve area if applicable. The owner shall ensure that no structures are built over the absorption area and that the area is not disturbed in any manner that will render it unusable for future installation of drainfield trenches.
  - c. Unless specifically authorized in advance, the location of the distribution box shall remain unchanged.
  - d. Lateral trench runs must be as long as practical within the limits of the approved site.
  - e. The owner is responsible for providing an "as-built" sketch of the gravelless system to be included with the paperwork submitted to the local health department at the time of inspection (this is typically prepared by the contractor or the AOSE). The sketch (may be hand-drawn) must be legible and shall indicate the "as-built" length and location of each trench in relation to the distribution box. The sketch shall indicate any modifications made to comply with manufacturer's specifications (e.g., depth of distribution box when necessary to accommodate varying inlet elevations). The sketch shall include a comment identifying the name of the manufacturer, the type or model number of the gravelless system, and the number of units, linear feet

of product, etc. used in the installation. VDH will not issue an operation permit for any gravelless system until the sketch is received.

- f. If the design was by an AOSE or PE the contractor shall notify them, prior to the substitution, to request their concurrence and approval unless the designer has included a statement on the permit stating that substitution is allowable. Note: Since the AOSE or PE that designed the system will be required to inspect the system and recommend approval prior to issuance of an operation permit assuring their concurrence prior to substitution, is important in order to assure construction approval and authorization to use the system.

(2) New construction permits. Persons qualified and authorized to design onsite sewage systems in Virginia may specify a gravelless system in accordance with this policy and a manufacturer's specifications when designing or certifying the design of a septic-effluent system. The following shall apply:

- a. The absorption area surrounding and including the gravelless system ("footprint") may be reduced by 25% in Texture Group I, II, and III soils and by 15% in Texture Group IV soils from the sizing requirements of the *Regulations including the reserve area* when required by the *Regulations*. The absorption area must comply with all other applicable requirements of the *Regulations* including, but not limited to, vertical and horizontal separation distances, trench location, trench depth, and contour orientation. The primary and repair absorption areas shall be shown on the construction drawings.
- b. Except for sizing the drainfield in accordance with manufacturer's specifications and substituting the appropriate proprietary materials or devices, the drainfield shall be designed exactly as provided in the *Regulations*, including, but not limited to the lateral separation of trenches based on trench width.
- c. Lateral trench runs must be as long as practical within the limits of the approved site so as to minimize the linear loading rate.

## 2. Physical Requirements.

- A. The storage capacity of a gravelless system must be substantially equivalent to that available in a gravel system.

3. Installation.

- A. All installers of gravelless systems shall be trained by the manufacturer in the proper installation and shall be certified by the manufacturer as having passed the manufacturer's training qualifications prior to installing any gravelless system pursuant to this policy. The manufacturer shall maintain a current list of qualified installers and shall make the list available to VDH through its website or by other appropriate means. The manufacturer shall provide training to district and local health department staff (free of charge) at times and places that are mutually agreeable.
- B. The manufacturer shall ensure that only certified and trained contractors install their proprietary systems according to this procedure. The manufacturer's warranty, see paragraph 5 below, shall apply to any system properly installed by a contractor licensed in Virginia, regardless of whether the installer was certified and trained by the manufacturer. VDH may approve a properly installed system if the only defect is that the contractor who installed it was not certified by the manufacturer. If a manufacturer fails to adequately enforce this provision, such failure may be grounds to terminate the manufacturer's authorization pursuant to this policy.
- C. The manufacturer shall prepare an installation manual specifically detailing procedures for installation of its system at recommended specifications, shall train installers in accordance with the manual, and shall require adherence to the manual as a condition of installer certification. The manual shall be revised and updated as necessary to ensure proper installation and to prevent installation related operational problems. A copy of the most current manual and any revisions thereto shall be provided to VDH.
- D. In accordance with the *Regulations* and current VDH policies, VDH will perform final construction inspections on gravelless systems. However, VDH will not be responsible for verifying that the installer, PE, AOSE, or other qualified designer has complied with the manufacturer's specifications for the gravelless system. Such responsibility shall lie with the person who designed the gravelless system or with the contractor who installed the system (in cases where a VDH permit is modified).

4. Warranty.

The manufacturer shall provide to each owner a full written warranty on each gravelless system installed pursuant to this policy. Such warranty shall be for a minimum of five years from the date of installation covering manufacturer's design and installation specifications, labor and material costs to remedy failure to meet performance expectations as specified in 12 VAC 5-610-350 for systems used and installed in

accordance with manufacturer's specifications. The warranty shall automatically transfer to each subsequent owner of the property during the warranty period. See Appendix A.

5. Financial Assurance.

A Prior to allowing the installation of any gravelless system the manufacturer shall deliver to VDH evidence of financial assurance in the form of a letter of credit, insurance policy, cash escrow, or other assurance acceptable to VDH in the initial amount of at least \$100,000.00, which shall be available for payment of unsatisfied warranty claims should the Commissioner determine that the manufacturer refuses to pay a legitimate warranty claim or claims or is financially unable to honor the warranty required in Paragraph 5 above.

B. The amount of financial assurance will be increased annually (if necessary) based on the following formula (N, F, and C will be inclusive of all units installed under GMP #116 and GMP #127):

$$FA = N \times F \times C$$

Where: FA = the financial assurance amount in dollars;

N = the number of systems installed in Virginia over the previous five years;

F = the percent failure rate (may be modified after two years of data are collected);

C = the average cost of repair (may be modified after five years of data are collected).

The manufacturer shall deliver evidence of the annually revised financial assurance amount on or before December 31st of the year proceeding the year for which the financial assurance is required. A failure rate of 3 % (F) and a repair cost of \$5,000.00 (C) will be assumed until data are available from systems installed in Virginia that indicate a different failure rate or repair cost should be used for a particular Substituted System. The manufacturer shall be responsible for collecting and reporting the data used to calculate (N) each year. Regardless of the formula, the minimum amount of financial assurance required shall be \$100,000.00.

6. Authorization.

A. Owners will be responsible for ensuring that the manufacturer has obtained written authorization from VDH to install their proprietary non-gravel systems prior to installing or allowing the installation of any gravelless system pursuant to this policy. VDH will maintain a list of authorized manufacturers. Prior to receiving authorization from VDH to install systems at manufacturer's specifications in Virginia, the manufacturer shall provide to VDH the following documentation:

- (1) The manufacturer's product and design specifications for installing its system (i.e., the design and installation manual);
- (2) Evidence of financial assurance acceptable to VDH in the amount of at least \$100,000.00;
- (3) The warranty language acceptable to VDH (see Appendix A) that will be provided to owners; and
- (4) The list of certified installers (Note: this list is to be provided to the extent that the manufacturer has trained and certified installers at time of application for authorization. Authorization of a gravelless system pursuant to this policy is not contingent upon this list, however it shall be the Manufacturer's responsibility to ensure that all installers are properly trained and certified and that the list of certified installers is provided to VDH prior to the installation of any gravelless system).

B. VDH shall issue the manufacturer's authorization under this policy within thirty (30) calendar days of receipt of the above documentation if it complies with the conditions of this policy. If VDH determines that the information submitted does not comply with the conditions of this policy, it shall notify the manufacturer, within thirty (30) calendar days, of the deficiencies.

C. VDH's recognition of an alternative method of designing a system pursuant to this policy shall not be construed, reported, or advertised as an approval or endorsement by the Virginia Department of Health.

7. Termination.

VDH may terminate a manufacturer's authorization under this policy for failure to comply with any condition or conditions of this policy. VDH may terminate the manufacturer's authorization under this policy if the failure rate exceeds (F) in Paragraph 6.B above. VDH may revoke any permit issued pursuant to this policy if it determines that a manufacturer, owner or contractor has not complied with any provision of this policy or applicable provisions of the *Regulations*.